REMARKS

Applicant respectfully requests further examination and reconsideration in view of the instant response. Claims 1, 3-14, 16-20 and 22-24 remain pending in the case. Claims 1-24 are rejected. Claims 2, 15 and 21 are cancelled herein without prejudice. Claims 1, 3-9, 11, 12, 14, 16-18 and 20 are amended herein. No new matter has been added.

Applicant wishes to point out to the Examiner did not indicate the rejection of Claims 4 and 6 within the statement of rejected claims of section 2 of the present Office Action (see page 3). However, Examiner did address the rejection of Claims 4 and 6 within the body of section 2. Applicant requests that the Examiner properly include all rejected claims in the statement of rejection in the next Office Action so as to avoid confusion, if necessary.

35 U.S.C. §112, first paragraph

Claims 1, 3-7, 12-14, 20 and 22 are rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. Specifically, claims 1, 12 and 20 are rejected because the terms "first transmission rate" and "second transmission rate" were not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention. Applicant has amended Claims 1, 12, 14 and 20 herein to remove the terms "first transmission rate" and "second

transmission rate." Therefore, a discussion of the rejection of Claims 1, 3-7, 12-14, 20 and 22 under 35 U.S.C. §112, first paragraph, is moot at this time.

35 U.S.C. §103(a)

Claims 1, 3, 7, 12-14, 16, 20 and 22 stand rejected under 35 U.S.C. §103(a) as being unpatentable over United States Patent 6,505,216 by Schutzman et al., hereinafter referred to as the "Schutzman" reference, in view of United States Patent 5,613,060 by Britton et al., hereinafter referred to as the "Britton" reference. Applicant has reviewed the cited references and respectfully submits that the embodiments of the present invention as recited in Claims 1, 3, 7, 12-14, 16, 20 and 22 are patentable over Schutzman in view of Britton for the following rationale.

Applicant respectfully directs the Examiner to independent Claim 1 that recites that an embodiment of the present invention is directed to (emphasis added):

> A method of archiving a database, comprising:
> storing a plurality of archive logs comprising a plurality of transactions on an operational database;
> transmitting a plurality of asynchronous streams to a backup database wherein a first asynchronous stream of said plurality of asynchronous streams is transmitted asynchronously with respect to a second asynchronous stream of said plurality of asynchronous streams, wherein each asynchronous stream of the plurality of asynchronous streams corresponds to a particular archive log of the plurality of archive logs, and wherein the plurality of asynchronous streams are transmitted simultaneously; and
> updating the backup database with the plurality of transactions.

Independent Claims 12, 14 and 20 recite similar limitations. Claims 3 and 7 that depend from independent Claim 1, Claim 13 that depends from independent Claim 12, Claim 16 that depends from independent Claim 14, and Claim 22 that depends from independent Claim 20 provide further recitations of features of the present invention.

Applicant respectfully asserts that Schutzman and embodiments of the claimed invention are very different. Applicant understands Schutzman to teach a method and apparatus for backing-up and restoring files using multiple trails. In particular, Schutzman teaches that the multiple trails are operable to backup the files synchronously. Moreover, Schutzman teaches that different data portions of a file are transmitted over different respective trails of the multiple trails. Furthermore, Schutzman teaches that each of the data portions is stored in a different backup device.

Schutzman teaches a backup and restore system that can use separate data trails or data streams for concurrent synchronized transfer of different data portions (col. 11, lines 27-25). With reference to Figure 3, the multi-trail backup system of Schutzman is explicitly shown. In particular, the multi-trail backup system of Schutzman can transfer different data portions (120-1 through 120-3) between storage devices (116-1 through 116-K) and respective backup devices (114-1 through 114-L) over the same time period (col. 14, lines 24-28). In other

words, the different trails are transmitted to backup devices synchronously, as they are transmitted over the same period of time.

Moreover, Schutzman teaches that each data portion transmitted concurrently is transmitted to a different respective backup device. Each data portion 120-1 through 120-3 is treated as an individual file and is assigned a specific tape drive for backup (col. 17, lines 33-39). In particular, Schutzman teaches that file 120 is divided into data portions 120-1 through 120-3 which are stored within respective storage device 116-1 through 116-k. In other words, each data portion is transmitted from a different storage device to a different backup device.

In contrast, embodiments of the claimed invention are directed towards a method of archiving a database wherein a plurality of asynchronous streams are transmitted simultaneously to a backup database, as claimed. In particular, a first asynchronous stream of the plurality of asynchronous streams is transmitted asynchronously to a second asynchronous stream of the plurality of asynchronous streams, as claimed.

As described in the present specification, "archive logs are transferred from a host database to the receiving backup database in the form of multiple asynchronous streams" (page 8, lines 12-14; emphasis added). Transmitting the multiple streams simultaneously (e.g., at the same time) and

asynchronously (e.g., without regard to system clocking) facilitates the expeditious recovery of the backup process. In other words, each asynchronous stream is transmitted asynchronously with regard to all other streams such that the asynchronous streams are transmitted independently of each other. In particular, the streams are not subjected to a particular time period for transmission, as taught by Schutzman.

Applicant respectfully asserts that Schutzman in particular does not teach, disclose, or suggest a method of archiving a database including "transmitting a plurality of asynchronous streams to a backup database wherein a first asynchronous stream of said plurality of asynchronous streams is transmitted asynchronously with respect to a second asynchronous stream of said plurality of asynchronous streams," as claimed (emphasis added). On the contrary, by teaching that the data portions are transmitted to the backup devices over the same time period, Applicant understands that the update log records of Schutzman are transmitted synchronously, and that Schutzman thus teaches away from the present invention as claimed. Moreover, by teaching that each data portion of the file is transmitted to a different backup device, Schutzman also teaches away from "transmitting a plurality of asynchronous streams to a backup database," as claimed (emphasis added).

Moreover, the combination of Schutzman and Britton fails to teach or suggest this claim limitation because Britton does not overcome the

shortcomings of Schutzman. Britton, alone or in combination with Schutzman, does not teach, disclose, or suggest transmitting a plurality of asynchronous streams to a backup database, as clamed. As described above, Schutzman teaches a system where multiple streams are synchronously transferred between corresponding pairs of storage devices and backup devices such that a single stream synchronously transmits a data portion between a different storage device and a different backup device.

Applicant understands Britton to teach an asynchronous resynchronization of a commit procedure. In particular, Applicant understands Briton to teach a system wherein an initiating application runs while resynchronization is implemented in parallel. However, Briton is silent to the transmission of multiple asynchronous streams. In contrast, the cited passages of Briton teach that while processes may be executed in parallel, any data is transmitted sequentially. In essence, Britton teaches a system wherein applications operate in parallel, but where data is transmitted sequentially.

Applicant respectfully asserts that Britton in particular does not teach, disclose, or suggest a method of archiving a database including "transmitting a plurality of asynchronous streams to a backup database wherein a first asynchronous stream of said plurality of asynchronous streams is transmitted asynchronously with respect to a second asynchronous stream of said plurality of asynchronous streams," as claimed (emphasis added).

Applicant respectfully asserts that nowhere does the combination of Schutzman and Britton teach, disclose or suggest the present invention as recited in independent Claims 1, 12, 14 and 20, and that this claimed subject matter is thus in a condition for allowance. Therefore, Applicant respectfully submits that the combination of Schutzman and Britton also does not teach or suggest the additional claimed features of the present invention as recited in Claims 3 and 7 that depend from independent Claim 1, Claim 13 that depends from independent Claim 12, Claim 16 that depends from independent Claim 14, and Claim 22 that depends from independent Claim 20. Therefore, Applicant respectfully submits that Claims 3, 7, 13, 16, and 22 overcome the rejection under 35 U.S.C. § 103(a), and are in a condition for allowance as being dependent on allowable base claims.

Claim 5 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Schutzman in view of Britton, and further in view of United States Patent 5,812,398 by Nielson, hereinafter referred to as the "Nielson" reference. Claim 5 is dependent on independent Claim 1. Applicant has reviewed the cited references and respectfully submits that the embodiments of the present invention as recited in Claim 5 is not unpatentable over Schutzman in view of Britton, further in view of Nielson, for the following rationale.

Applicant respectfully asserts that the combination of Schutzman, Britton and Nielson does not teach, describe or suggest the invention as claimed. As described above, Schutzman teaches a system where multiple streams are synchronously transferred between corresponding pairs of storage devices and backup devices such that a single stream synchronously transmits a data portion between a different storage device and a different backup device, and Britton teaches a system wherein applications operate in parallel, but where data is transmitted sequentially.

Moreover, the combination of Schutzman, Britton and Nielson fails to teach or suggest this claim limitation because Nielson does not overcome the shortcomings of Schutzman and/or Britton. Nielson, alone or in combination with Schutzman and Britton, does not teach, disclose, or suggest transmitting a method of archiving a database including "transmitting a plurality of asynchronous streams to a backup database wherein a first asynchronous stream of said plurality of asynchronous streams is transmitted asynchronously with respect to a second asynchronous stream of said plurality of asynchronous streams," as claimed. Applicant understands Nielson to teach a method and system for escrowed backup of hotelled [sic] World Wide Web sites. However, Nielson is silent as to the asynchronous streams of data.

Applicant respectfully asserts that nowhere does the combination of Schutzman, Britton and Nielson teach, disclose or suggest the present

invention as recited in independent Claim 1, and that this claimed subject matter is thus in a condition for allowance. Therefore, Applicant respectfully submits that the combination of Schutzman, Britton and Nielson also does not teach or suggest the additional claimed features of the present invention as recited in Claim 5 dependant on allowable base Claim 1. Therefore, Applicant respectfully submits that Claim 5 overcomes the rejection under 35 U.S.C. § 103(a), and is in a condition for allowance as being dependent on an allowable base claim.

Claims 8-11, 17-19, 23 and 24 stand rejected under 35 U.S.C. §103(a) as being unpatentable over United States Patent 6,085,298 by Ohran, hereinafter referred to as the "Ohran" reference, in view of Britton. Applicant has reviewed the cited references and respectfully submits that the embodiments of the present invention as recited in Claims 8-11, 17-19, 23 and 24 are not unpatentable over the combination of Ohran and Britton in view of the following rationale.

Applicant respectfully directs the Examiner to independent Claim 8 that recites that an embodiment of the present invention is directed to (emphasis added):

> A method of performing automatic recoveries on an archived database, comprising:
> comparing files residing on an operational database to files residing on a backup database;

determining whether there are any missing files by checking for files which exist on the operational database and which do not exist on the backup database;

recopying files from the operational database over to the backup database which are missing;

determining whether there are any corrupted files by checking for files which have a different size on the operational database as compared to corresponding file residing on the backup database;

recopying files from the operational database to the backup database which have become corrupted, wherein the automatic recovery process is run by a program automatically in the background without requiring initiation and is run independent of a complete system backup.

Independent Claims 17 and 23 recite similar limitations. Claims 9-11 that depend from independent Claim 8, Claims 18 and 19 that depend from independent Claim 17, and Claim 24 that depends from independent Claim 23 provide further recitations of features of the present invention.

The combination of Ohran and Britton does not teach a method of performing automatic recoveries on an archived database by a program automatically in the background without requiring initiation and that is run independent of a complete system backup, as claimed. For instance, Ohran and these embodiments of the claimed invention are very different. Applicant understands Ohran to teach a system and method for backing up a primary storage device to a backup storage device (col. 5, lines 24-27). Specifically, Ohran teaches a backup system that determines the difference between data located on the primary storage device and the backup storage device, and

backs up only the changed data (col. 5, lines 30-40). In particular, this determination is performed in conjunction with performing a system backup.

With reference to Figure 3 of Ohran, a block diagram of a backup system is shown. The backup system includes backup system processing block 60 and backup storage device 24. Backup system processing block 60 receives data, processes the data (as explained in Figure 10 of Ohran), and then stores the data on backup storage device 24 (col. 16, lines 13-20). In particular, the processing of the data as performed at backup system processing block 60 is performed in conjunction with the initiation of a backup.

With reference to Figure 10 of Ohran, at steps 214 and 216 it is identified whether a backup is being initiated (col. 29, lines 41-43). Ohran describes in detail various modes for initiating a backup (col. 20, lines 20-61). In particular, Applicant respectfully asserts that Ohran teaches that a backup must be initiated, and that the processing as performed at backup system processing block 60 must be performed in conjunction with a complete backup.

In contrast, embodiments of the claimed invention are directed towards a method of performing automatic recoveries on an archived database that is run independent of a complete system backup, as claimed. In particular, the automatic recovery process is not a system backup, as described in the Ohran

reference. In particular, as described in the present specification, the automatic recovery process "detects files on the backup database which may have been accidentally deleted or corrupted by comparing file systems of the host database to that of the backup database." These files are then recopied from the host database to the backup database. Specifically, only those files that are missing or corrupted are recopied; this is performed independent of a system backup.

A system backup is a time-consuming, computationally intensive task. In general, complete system backups are performed at a relatively low frequency (e.g., once a day, once a week) depending on the amount of data requiring backup. In contrast, an automatic recovery process is a relatively quick task that can be performed at a very high frequency (e.g., every second) because very little data actually gets recopied, only the corrupted or missing data.

Applicant respectfully asserts that Ohran in particular does not teach, disclose, or suggest a method of performing automatic recoveries on an archived database, as clamed. On the contrary, as Ohran teaches a backup that must be initiated in conjunction with comparing data, Applicant respectfully asserts that Ohran teaches away from such a configuration.

Moreover, the combination of Ohran and Britton fails to teach or suggest the present invention as claimed because Britton does not overcome the shortcomings of Ohran. Britton, alone or in combination with Ohran, does not show or suggest a method of performing automatic recoveries by a program automatically in the background without requiring initiation and that is run independent of a complete system backup, as claimed. As described above, Britton teaches a system wherein applications operate in parallel, but where data is transmitted sequentially. Moreover, Britton teaches that a manual recovery administrative request is used to repair sync point failures. In particular, "[t]he appropriate response state information is determined off-line from manual investigation of sync point log records. The appropriate response data (state information) is determined by administrators from manual investigation of sync point log records" (col. 52, lines 22-33; emphasis added). In particular, an administrator manually submits the recovery administrative request. Accordingly, Britton requires a user to initiate the recovery administrative request.

In contrast, as described above, embodiments of the claimed invention are directed towards a method of performing automatic recoveries on an archived database, as claimed. Applicant respectfully asserts that the recovery administrative request as described in the Britton reference requires initiation by a user, thereby teaching away from the invention as claimed.

Britton does not teach, disclose, or suggest a method of performing automatic recoveries by a program automatically in the background without requiring initiation and that is run independent of a complete system backup, as claimed. On the contrary, Britton teaches away from such a configuration, as Britton requires user initiation. In view of this claim limitation not being shown or suggested in Britton, in combination with the above arguments, Applicant respectfully submits that independent Claims 8, 17 and 23 overcome the cited references and are therefore allowable over the combination of Ohran and Britton.

Applicant respectfully asserts that nowhere does the combination of Ohran and Britton teach, disclose or suggest the present invention as recited in independent Claims 8, 17 and 23, and that this claimed subject matter is thus in a condition for allowance. Therefore, Applicant respectfully submits that the combination of Ohran and Britton also does not teach or suggest the additional claimed features of the present invention as recited in Claims 9-11 that depend from independent Claim 8, Claims 18 and 19 that depend from independent Claim 17, and Claim 24 that depends from independent Claim 23. Therefore, Applicant respectfully submits that Claims 9-11, 18, 19 and 24 overcome the rejection under 35 U.S.C. § 103(a), and are in a condition for allowance as being dependent on allowable base claims.

CONCLUSION

Based on the arguments presented above, Applicant respectfully asserts that Claims 1, 3-14, 16-20 and 22-24 overcome the rejections of record and, therefore, Applicant respectfully solicits allowance of these Claims.

The Examiner is invited to contact Applicant's undersigned representative if the Examiner believes such action would expedite resolution of the present Application.

Respectfully submitted,

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Dated: 19 Aug, 2005

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